



August 8, 2006

Mr. Mark Verhey
Certified Engineering Geologist
Humboldt County Division of Environmental Health
100 H Street, Suite 100
Eureka, CA 95501

Re: **Groundwater Monitoring Report - Second Quarter 2006**
Seymour Residence
1111 Riverside Drive
Rio Dell, CA
LOP # 12032
Project # AE001H

Dear Mr. Verhey,

On behalf of Jean and Everett Seymour, Clearwater Group (Clearwater) has prepared this *Second Quarter 2006 Groundwater Monitoring Report*. It presents background information, monitoring activities and monitoring results, conclusions, recommendations, and the planned activities for the referenced property (see **Figure 1** for a vicinity map).

Background

The subject site was improved with one 550-gallon capacity gasoline underground storage tank (UST). The tank location is shown in **Figure 2**. The tank was operated until 1987 when permitting began for in-place closure of the UST. In February 1988, the tank was abandoned in-place in accordance with the requirements of the Humboldt County Division of Environmental Health (HCDEH). According to HCDEH files, one soil sample was collected from an unspecified location by Beacom Construction of Fortuna, CA under HCDEH supervision in the vicinity of the UST at that time. Soil analytical results indicated that a release of petroleum hydrocarbons had occurred.

In February 1989, three additional soil samples (B-1, B-2, B-3, **Figure 2**) were collected by Beacom Construction from the south end of the (closed in place) tank. The depth and specific

locations of each of the three borings is unknown. However, patches in the concrete drive suggest the locations of these three former boring locations. Laboratory analytical results indicate that two of the three soil samples (B-2 and B-3) contained detectable concentrations of gasoline-range hydrocarbons.

In June 1999, the HCDEH collected groundwater samples from two borings (B-1 and B-2, **Figure 2**) from the vicinity of the closed UST. Each boring was advanced using a hand auger to a depth of approximately 7 to 8 feet below ground surface (bgs). The HCDEH also collected one groundwater sample from an on-site irrigation well (no longer used). Of the three samples collected by the HCDEH, only the groundwater sample collected from boring B-1 contained detectable concentrations of petroleum hydrocarbons. In a letter dated May 30, 2000, the HCDEH requested that a hydrogeologic investigation be performed. Clearwater subsequently prepared and submitted a *Workplan for Subsurface Investigation* dated July 19, 2000 to the HCDEH.

On December 8, 2000, Clearwater advanced five soil borings (B-3 through B-7) near the abandoned UST to define the extent of petroleum hydrocarbon contamination at the subject property. The borings were advanced by hand Geoprobe™ equipment to depths ranging from 8 to 10 feet bgs. The soil borings were located north, northwest, west, and south of the former UST (**Figure 2**). Data collected during this investigation are presented in Clearwater's *Subsurface Investigation Report* dated March 23, 2001.

In a letter dated May 15, 2001, the HCDEH requested a two-phase Corrective Action Plan be prepared to implement Clearwater recommendations contained in an *Initial Subsurface Investigation Report*, dated January 25, 2001, which included installation of groundwater monitoring wells and possible excavation and removal of the abandoned UST. Clearwater subsequently prepared and submitted a *Corrective Action Phase 1 Subsurface Investigation and Remediation Workplan*, dated June 14, 2001 per HCDEH's request.

On March 7, 2002, Clearwater supervised the installation of four monitoring wells (MW-1, MW-2, MW-3 and MW-4, **Figure 2**) and initiated a quarterly groundwater monitoring program. Results of monitoring well installation and the first quarterly groundwater monitoring were presented in Clearwater's *Monitoring Well Installation and First Quarter 2002 Groundwater*

Monitoring Report dated April 3, 2002. Well construction data of these wells is presented in **Table 1**. Quarterly sampling has occurred from that event to the present day.

In June 2004, Clearwater Group produced a *Remediation Workplan Addendum* recommending the application of a bioremediation system to reduce the dissolved phase hydrocarbon contamination around MW-1. The proposed method was an In-situ Oxygen Curtain (iSOC) system.

The workplan was accepted by the HCDEH and in August 2004, Clearwater Group conducted a baseline microbiological study at the property. Various biological and geo-chemical parameters were tested and analyzed. The results indicated that the core of the hydrocarbon plume or “hot spot” had become anaerobic over time, either from slow biodegradation of petroleum hydrocarbons or the biodegradation of other organic material, which are present in the aquifer. Microbial analyses indicated that hydrocarbon-degrading microbes were present in both MW-1 and MW-2. Chemical concentrations of the petroleum hydrocarbons were within the range for effective enhanced bioremediation. One iSOC unit was recommended to be installed in MW-1.

The HCDEH concurred with the Clearwater findings and approved the iSOC installation for MW-1. On October 6, 2004 one iSOC unit was installed in MW-1. The iSOC system was monitored at two, four and eight-week (post installation) intervals and since then continuously on a monthly basis.

On March 1, 2005, Clearwater received a letter from the HCDEH requesting further investigations to delineate and monitor possible down-gradient contamination. Clearwater responded to that letter recommending assessing performance of the iSOC system (i.e. wait to see the results of the third quarter groundwater monitoring event) prior to changing course and conducting further investigations. The HCDEH concurred with these comments and recommendations.

In April 2005, Clearwater conducted a semi-annual geo-chemical study to monitor and evaluate the performance of the iSOC system. The study concluded that the iSOC system was operating correctly and that aerobic bioremediation was occurring at the site. The report was submitted to the HCDEH on June 16, 2005.

Groundwater Monitoring Activities

The second quarter 2006 groundwater monitoring event was conducted on June 6, 2006. Monitoring wells MW-1 through MW-4 were gauged, purged, and subsequently sampled. Clearwater used an electronic water level indicator, accurate to within ± 0.01 foot, to gauge depth to water. The wells were checked for the presence of separate-phase hydrocarbons (SPH) prior to purging. No measurable thickness of SPH was observed in any of the wells.

In preparation for sampling, the wells were purged of groundwater until water quality parameters (temperature, pH, and conductivity) stabilized. Purging devices were cleaned between use by an Alconox® wash followed by double rinse in clean potable water to prevent cross-contamination. Rinseate and purge water was transported on the sampling vehicle with an interior tank and pumped into labeled drums at the Clearwater yard. All purge water was disposed of under manifest at Instrat of Rio Vista, CA. Following recovery of water levels to at least 80% of their static levels, Clearwater collected groundwater samples from the wells using disposable polyethylene bailers and poured from the bailers into HCl preserved laboratory-supplied VOA's. Sample containers were labeled, documented on a chain-of-custody form, and placed on ice in a cooler for transport to the project laboratory. Groundwater samples collected from MW-1 were analyzed for concentrations of total petroleum hydrocarbons as gasoline (TPH-g), benzene, toluene, ethylbenzene and xylenes (BTEX), methyl tertiary butyl ether (MTBE), di-isopropyl ether (DIPE), tertiary amyl methyl ether (TAME), ethyl tertiary butyl ether (ETBE) and tertiary butyl alcohol (TBA) using U.S. Environmental Protection Agency (EPA) Method 8260B. Groundwater samples collected from MW-2 through MW-4 were analyzed for concentrations of TPH-g and BTEX by EPA Method 8260B. Laboratory work was conducted by Kiff Analytical, a Department of Health Services (DHS)-certified laboratory, located in Davis, California. The monitoring activities during this quarter are summarized below:

Wells gauged:	MW-1, MW-2, MW-3 and MW-4
Wells sampled:	MW-1, MW-2, MW-3, and MW-4
Field Analysis:	DO, ORP, Total and Ferrous Irons (MW-1 through MW-4)
Laboratory analyses:	TPH-g, BTEX, MTBE, DIPE, TAME, ETBE, TBA (for MW-1 by EPA Method 8260B); TPH-g and BTEX (for MW-2, MW-3, and MW-4 by EPA Method 8260B)

Field activities described above were conducted in accordance with Clearwater's Groundwater Monitoring and Sampling Field Procedures (**attached**). Groundwater gauging and well purging information are presented on Gauging/Purging Calculations and Data sheets (**attached**). The analytical lab report is attached as Kiff Report No. 50968.

Groundwater Monitoring Results

Results of the second quarter 2006 monitoring are summarized below:

Depth to water:	Ranged from 1.83 (114.59 ft above mean sea level (msl) [MW-1] to 2.53 (113.12 ft above msl) [MW-2] feet below top of well casing (also shown in Table 2)
Flow direction/gradient:	Northwesterly direction with a horizontal hydraulic gradient of 0.02 ft/ft (Figure 3)
Floating product:	None
TPH-g concentration:	MW-1 through MW-4, <50 µg/L
Benzene concentration:	MW-1 through MW-4, <0.50 µg/L
MTBE Concentration:	<0.50 µg/L (MW-1)

Based on historical data, the area near the abandoned in place former UST (or monitoring well MW-1) has been recognized as the “hot spot” on site. Sampled TPH-g concentrations from MW-1 during the first through third quarterly monitoring events in 2004 were in the range of 2,900 µg/L (lowest) to 18,000 µg/L (highest). Benzene concentrations ranged from 240 µg/L to 880 µg/L within the same period. Historically the maximum MTBE concentration was 0.85 µg/L, which was sampled from the third quarter 2004. However, none of the wells (MW-1 through MW-4) reported hydrocarbon or MTBE concentrations that were above detection limits in the fourth quarter 2004 or first quarter 2005. In the second quarter 2005, there was a slight rebound in contaminant concentrations in MW-1 (81 µg/L TPH-g). In the third quarter 2005, contaminant concentrations returned to non-detect levels for all analytes except xylenes in MW-1, which was reported at 0.52 µg/L. In the fourth quarter 2005, all contaminant concentrations returned to or remained at non-detect levels. Non-detect contaminant concentrations have continued up to this second quarter 2006 sampling event. The cumulative groundwater elevations and analytical data

for the current and previous quarters are listed in **Table 2**. The status of enhanced bioremediation is reflected in the indirect geo-chemical indicators listed in **Tables 3 and 4**.

iSOC System Operation and Maintenance

iSOC operation and maintenance (O&M) is conducted on a monthly basis. The O&M event includes the following activities:

- Gauge all monitoring wells (MW-1 through MW-4);
- Conduct field sampling on MW-1 and MW-2 for pH, temperature, conductivity, DO, ORP, total Fe, Fe²⁺;
- Record oxygen usage and check for leaks;
- Inspect iSOC unit in MW-1 to ensure it is functioning correctly.

The results of the monthly O&M are included in Table 3.

Conclusions

- Hydrocarbon concentrations were below detectable limits in groundwater samples obtained from all monitoring wells (MW-1 through MW-4). As of this monitoring event, non-detect concentrations of TPH-g, benzene and MTBE have been reported for four consecutive quarters in all monitoring wells. The only contaminant to report above detection limits in this period was xylenes in the third quarter 2005 in MW-1; A concentration of 0.52 ug/L was reported.

Recommendations

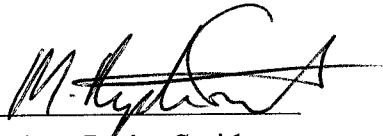
- The quarterly monitoring events have now (as of this second quarter 2006) effectively reported non-detect contaminant concentrations for four consecutive quarters. Clearwater recommends that the iSOC system be shutdown at the end of August 2006 when the next iSOC O&M visit is scheduled.
- After the system is shutdown, Clearwater recommends that four quarters of post-iSOC treatment groundwater monitoring be performed to verify that no rebound occurs and the site is remediated. Based on the proposed schedule groundwater monitoring would cease after the second quarter 2007 monitoring event.

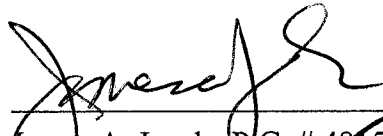
Certification

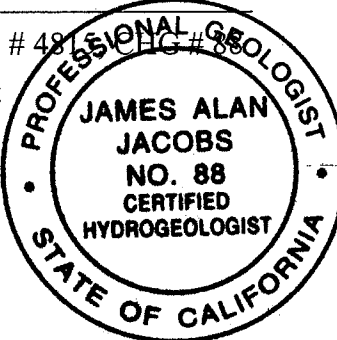
This report was prepared under the supervision of a Professional Geologist in the state of California at Clearwater Group. All statements, conclusions and recommendations are based solely upon published results from previous consultants, field observations by Clearwater Group and laboratory analysis performed by a California DHS-certified laboratory related to the work performed by Clearwater Group. Clearwater Group is not responsible for laboratory errors. The information and interpretation contained in this document should not be relied upon by a third party. The service provided by Clearwater Group has been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions in the area of the site. No other warranty, expressed or implied, is made.

Sincerely,

Clearwater Group


Matthew Ryder-Smith
Project Manager


James A. Jacobs P.G. # 48155 CHG # 88
Chief Hydrogeologist



CC: Jean and Everett Seymour
1111 Riverside Drive
Rio Dell, CA 95562

Ms. Kasey Ashley
North Coast Regional Water Quality Control Board
5550 Skylane Boulevard, Suite A
Santa Rosa, CA 95403

Attachments

Figure 1: Site Vicinity

Figure 2: Site Plan

Figure 3: Groundwater Elevations and Gradient - 7/6/06

Figure 4: Dissolved-Phase Hydrocarbon Distribution - 7/6/06

Table 1: Well Construction Data

Table 2: Groundwater Elevations and Analytical Data

Table 3: iSOC Field Sampling Parameters

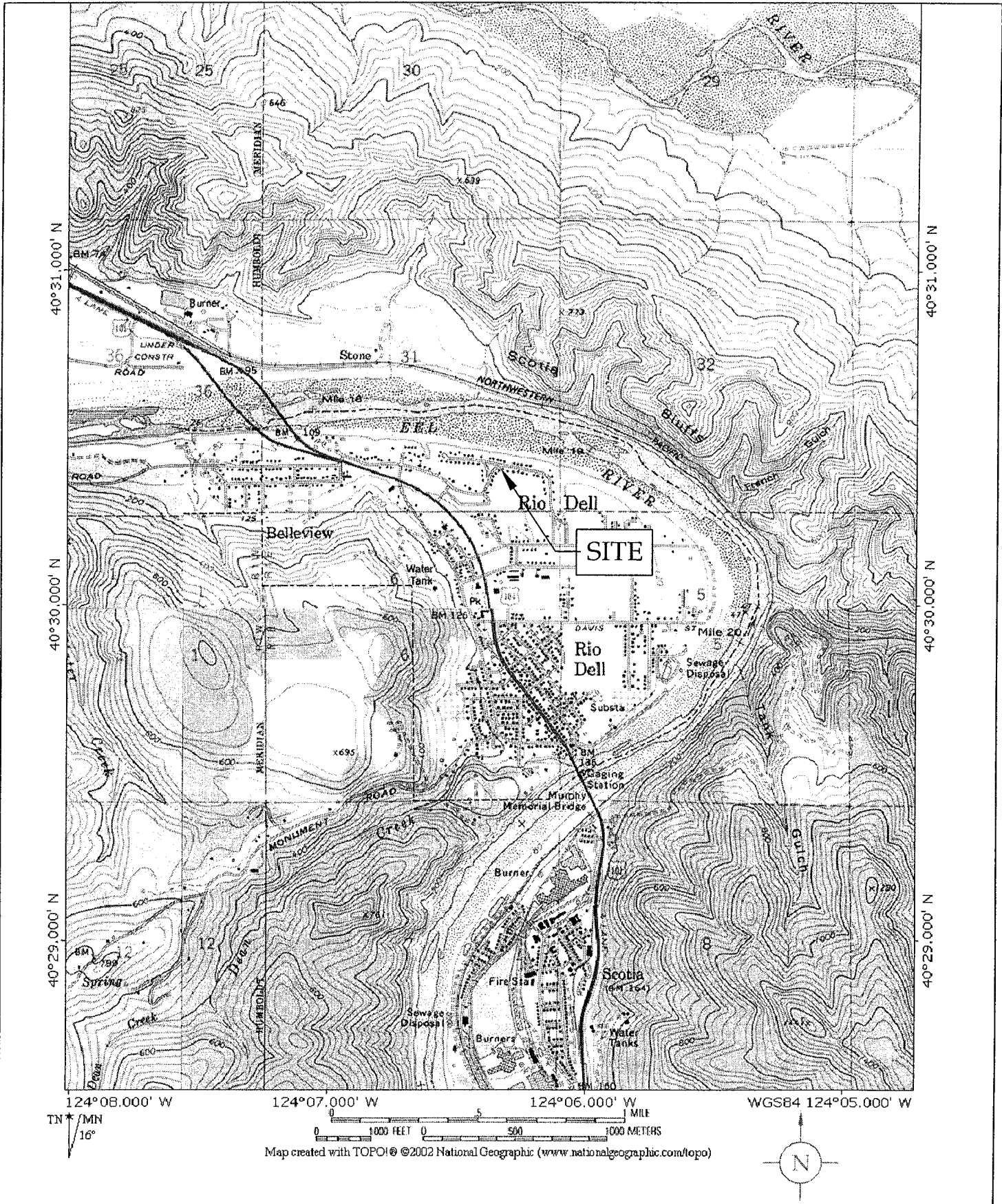
Table 4: Indirect Geochemical Indicators

Clearwater Groundwater Monitoring and Sampling Protocols

Clearwater Well Gauging Data/Purge Calculations and Well Purging Data

Laboratory Report and Chain-of-Custody Form

FIGURES



SITE LOCATION MAP

Seymour Residence
1111 Riverside Drive
Rio Dell, CA

CLEARWATER GROUP

Project No.
AE001H

Figure Date
1/06

Figure
1

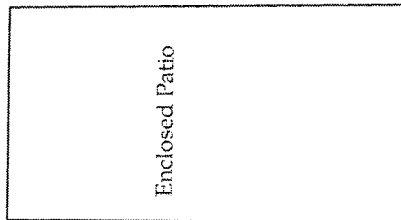
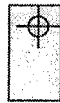
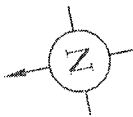
Explanation

- Property Line
- Fence
- Onsite Structures
- Irrigation well (inoperative)
- Monitoring Well
- Clearwater soil boring 12/00
- HCDEH soil boring 6/99
- Beacom Const. soil boring 2/89
- B-2



Steep Slope Downward to Eel River

Approximate Top of Slope



MW-4

B-4

1111 Riverside Drive Residence

Storage Shed

Carpport

Garage

MW-1

B-7

MW-3

B-3

B-1

B-2

B-6

MW-2

Abandoned 550 gal underground storage tank location

Residential Property

Public Sidewalk

Public Sidewalk

Riverside Drive

Site Plan

Seymour Residence
1111 Riverside Drive
Rio Dell, California

CLEARWATER GROUP

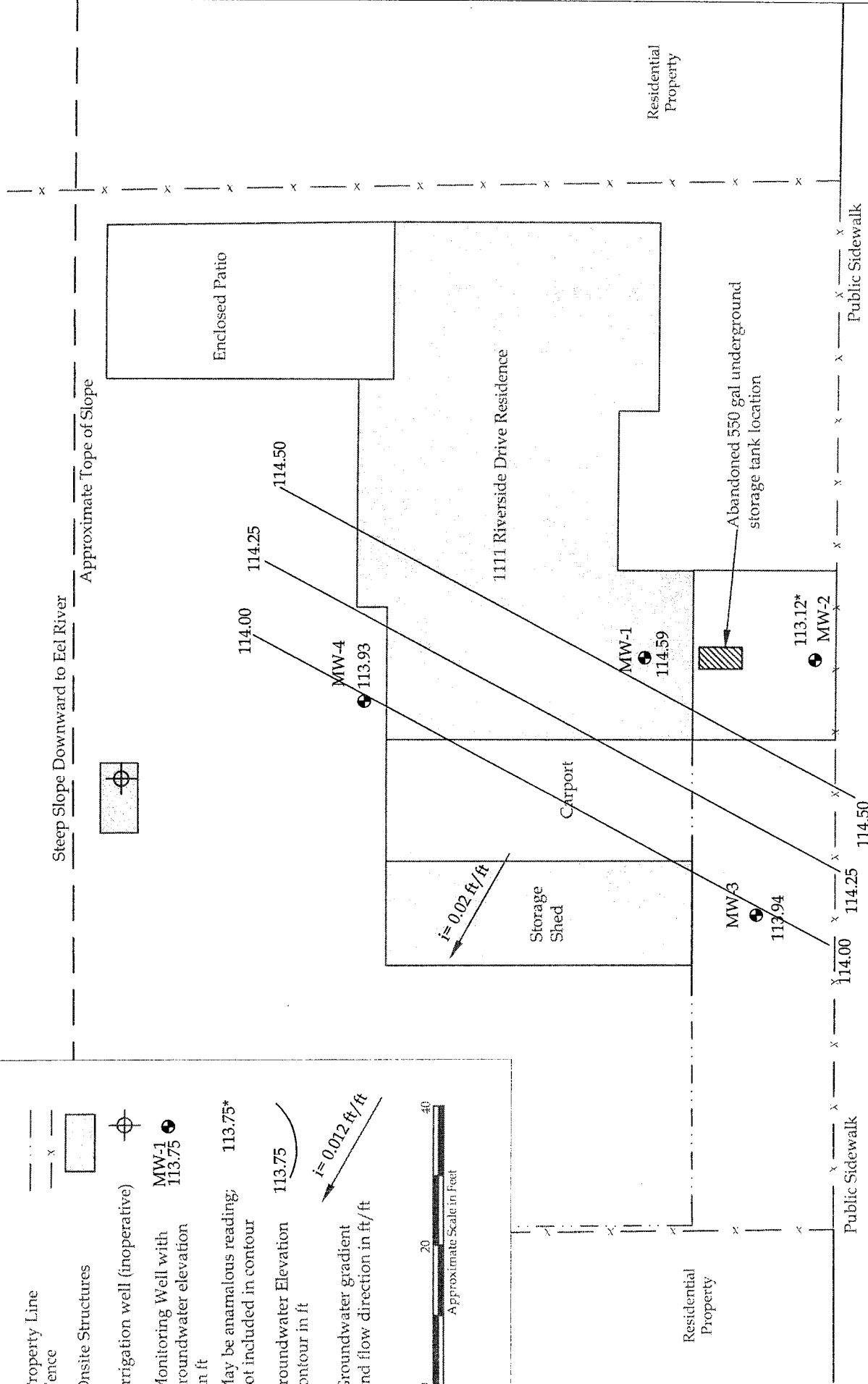
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AE001H

Figure Date
1/06

Figure
2

Explanation

- Property Line
- Fence
- Onsite Structures
- Irrigation well (inoperative)
- Monitoring Well with groundwater elevation in ft
MW-1 113.75
- May be anomalous reading; not included in contour 113.75*
- Groundwater Elevation Contour in ft 113.75
- Groundwater gradient and flow direction in ft/ft
 $i = 0.012 \text{ ft/ft}$
- Approximate Scale in feet
0 20 40



Groundwater Elevation and Gradient 7/6/06

Seymour Residence
1111 Riverside Drive
Rio Dell, California

CLEARWATER GROUP

Project No.
AE001H

Figure Date
8/06

Figure
3

TABLES

Table 1
WELL CONSTRUCTION DATA
Seymour Residence
1111 Riverside Drive
Rio Dell, California
Project # AE001C

Well Identification	Date Installed	Installed by	Casing Diameter (inches)	Total Depth (feet)	Blank Interval (feet)	Screened Interval (feet)	Slot Size (inches)	Filter Pack (feet)	Bentonite Seal (feet)	Cement (feet)
MW-1	3/7/2002	Clearwater	2	12.5	0-3	3-12.5	0.02	2-12.5	1-2	0-1
MW-2	3/7/2002	Clearwater	2	15	0-3	3-15	0.02	2-15	1-2	0-1
MW-3	3/7/2002	Clearwater	2	15	0-3	3-15	0.02	2-15	1-2	0-1
MW-4	3/7/2002	Clearwater	2	13	0-3	3-13	0.02	2-13	1-2	0-1

Table 2
Groundwater Elevations and Analytical Data
 Seymour Residence
 1111 Riverside Drive
 Rio Dell, CA
 Project # AE001C

Well No.	Sampling Date	TOC (feet)	DTW (feet)	GWE (feet)	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Methanol (µg/L)	Ethanol (µg/L)	Lead (µg/L)
MW-1	3/13/2002	116.42	2.15	114.27	380	35	6.8	16	37	<0.5	7.7	<0.5	<0.5	<0.5	<50	<5	<5
	6/18/2002	116.42	5.57	110.85	3,700	440	67	130	150	<0.5	28	<0.5	<0.5	<0.5	<50	<5	--
	9/19/2002	116.42	6.78	109.64	6,900	660	77	400	440	<2.5	39	<2.5	<2.5	<2.5	<250	<25	--
	12/31/2002	116.42	0.69	115.73	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	65	<5	--
	3/26/2003	116.42	1.53	114.89	300	21	5.3	11	21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
	6/23/2003	116.42	5.16	111.26	8,200	550	180	400	710	--	--	--	--	--	--	--	--
	9/29/2003	116.42	7.87	108.55	28,000	1,800	1,100	1,200	3,700	<10	<100	<10	<10	<10	--	--	--
	12/23/2003	116.42	3.32	113.10	1,400	190	9.8	25	45	<0.5	5.5	<0.5	<0.5	<0.5	--	--	--
	3/18/2004	116.42	3.82	112.60	2,900	240	73	110	380	<1	<10	<1	<1	<1	--	--	--
	6/22/2004	116.42	5.47	110.95	18,000	880	660	610	2,400	<5.0	<5.0	<5.0	<5.0	<5.0	--	--	--
	10/5/2004	116.42	9.92	106.50	4,200	290	11	250	140	0.85	<0.5	<0.5	<0.5	<0.5	--	--	--
	1/4/2005	116.42	1.74	114.68	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--
	4/18/2005	116.42	2.75	113.67	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--
	8/4/2005	116.42	5.84	110.58	81	3.7	1.4	1.6	5.60	<0.50	<0.5	<0.50	<0.50	<0.50	--	--	--
	10/6/2005	116.42	5.51	110.91	<50	<0.50	<0.50	<0.50	0.52	<0.50	<5.0	<0.50	<0.50	<0.50	--	--	--
	1/4/2006	116.42	1.68	114.74	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	--	--	--
	4/4/2006	116.42	1.74	114.68	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	--	--	--
	7/6/2006	116.42	1.83	114.59	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	--	--	--
MW-2	3/13/2002	115.65	9.35	106.30	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<50	26	<5
	6/18/2002	115.65	5.29	110.36	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<50	<5	--
	9/19/2002	115.65	6.63	109.02	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<50	<5	--
	12/31/2002	115.65	5.61	110.04	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<50	<5	--
	3/26/2003	115.65	5.55	110.10	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<50	<5	--
	6/23/2003	115.65	6.08	109.57	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	9/29/2003	115.65	7.15	108.50	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	12/23/2003	115.65	6.09	109.56	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	3/18/2004	115.65	5.31	110.34	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	6/22/2004	115.65	6.11	109.54	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	10/5/2004	115.65	7.47	108.18	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	1/4/2005	115.65	1.18	114.47	<50	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	--	--
	4/18/2005	115.65	3.32	112.33	<50	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	--	--
	8/4/2005	115.65	4.62	111.03	<50	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	--	--
	10/6/2005	115.65	5.52	110.13	<50	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	--	--
	1/4/2006	115.65	2.64	113.01	<50	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	--	--
	4/4/2006	115.65	2.68	112.97	<50	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	--	--
	7/6/2006	115.65	2.53	113.12	<50	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	--	--

Table 2
Groundwater Elevations and Analytical Data
 Seymour Residence
 1111 Riverside Drive
 Rio Dell, CA
 Project # AE001C

Well No.	Sampling Date	TOC (feet)	DTW (feet)	GWE (feet)	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Methanol (µg/L)	Ethanol (µg/L)	Lead (µg/L)
MW-3	3/13/2002	115.62	1.51	114.11	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<50	<5	<5
	6/18/2002	115.62	4.81	110.81	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<50	<5	--
	9/19/2002	115.62	5.48	110.14	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<50	<5	--
	12/31/2002	115.62	0.00	115.62	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<50	<5	--
	3/26/2003	115.62	0.25	115.37	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<50	<5	--
	6/23/2003	115.62	4.44	111.18	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	9/29/2003	115.62	8.01	107.61	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	12/23/2003	115.62	2.32	113.30	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	3/18/2004	115.62	3.37	112.25	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	6/22/2004	115.62	4.83	110.79	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	10/5/2004	115.62	10.31	105.31	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	1/4/2005	115.62	1.76	113.86	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	4/18/2005	115.62	1.56	114.06	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	8/4/2005	115.62	5.08	110.54	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	10/6/2005	115.62	6.47	109.15	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	1/4/2006	115.62	0.35	115.27	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	4/4/2006	115.62	1.76	113.86	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	7/6/2006	115.62	1.68	113.94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
MW-4	3/13/2002	116.75	2.41	114.34	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<50	<5	<5
	6/18/2002	116.75	7.31	109.44	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<50	<5	--
	9/19/2002	116.75	10.47	106.28	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<50	<5	--
	12/31/2002	116.75	1.22	115.53	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<50	<5	--
	3/26/2003	116.75	2.27	114.48	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<50	<5	--
	6/23/2003	116.75	7.03	109.72	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	9/29/2003	116.75	10.75	106.00	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	12/23/2003	116.75	4.32	112.43	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	3/18/2004	116.75	4.53	112.22	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	6/22/2004	116.75	7.55	109.20	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	10/5/2004	116.75	12.82	103.93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	1/4/2005	116.75	2.73	114.02	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	4/18/2005	116.75	3.68	113.07	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	8/4/2005	116.75	7.42	109.33	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	10/6/2005	116.75	8.03	108.72	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	1/4/2006	116.75	2.95	113.80	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	4/4/2006	116.75	2.98	113.77	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
	7/6/2006	116.75	2.82	113.93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--

DRY - NO ANALYSES CONDUCTED

Table 2
Groundwater Elevations and Analytical Data
 Seymour Residence
 1111 Riverside Drive
 Rio Dell, CA
 Project # AE001C

Well No.	Sampling Date	TOC (feet)	DTW (feet)	GWE (feet)	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Methanol (µg/L)	Ethanol (µg/L)	Lead (µg/L)
				MCL	--	1	150	700	1,750	13							
				Taste & odor threshold	5	--	42	29	17	--							
				NCRWQCB Cleanup Goals	<50	0.50	42	29	17	5							

Notes:

TOC: Top of casing referenced to benchmark NGS (# AC 9251) Aluminum Cap HPGN D CA 01 PA (State HWY 211)
 DTW: Depth to water as referenced to benchmark.
 GWE: Ground water elevation (msl) as referenced to benchmark
 µg/L = micrograms per liter = parts per billion = ppb
 "--": Not analyzed, available, or applicable
 MCL: Maximum contaminant level, an enforceable drinking water standard
 AL: Action level, a nonenforceable drinking water standard
 Taste & odor threshold: A drinking water standard
 NCRWQCB = North Coast Regional Water Quality Control Board (Region 1)

TPHg: Total Petroleum Hydrocarbons as Gasoline by EPA Method 8260B
 BTEx by EPA Method 8260B
 MTBE: Methyl Tertiary Butyl Ether by EPA Method 8260B
 TBA: Tertiary Butyl Alcohol by EPA Method 8260B
 DIPE: Di-Isopropyl Ether by EPA Method 8260B
 ETBE: Ethyl Tertiary Butyl Ether by EPA Method 8260B
 TAME: Tertiary Amyl Methyl Ether by EPA Method 8260B
 Methanol by EPA Method 8260B
 Ethanol: By EPA Method 8260B

Table 3
iSOC Field Sampling Parameters
 Seymour Residence
 111 Riverside Drive, Rio Dell, CA

Well I. D.	Sampling Date	TOC (feet)	DTW (feet)	GWE (feet)	pH	TEMP (°F)	COND. (mS/cm)	DO mg/L	ORP mV	Total Fe mg/L	Fe ²⁺ mg/L
MW-1	10/5/2004 (pre install)	116.42	9.92	106.50	6.27	66.6	619	3.6	47	8.8	4.6
MW-1	10/25/2004 (2-week)	116.42	2.98	113.44	6.47	62.9	273	39.7	54	1.1	0.0
MW-1	11/2/2004 (4-week)	116.42	3.91	112.51	6.26	70.1	290	38.1	50	0.4	0.0
MW-1	12/03/2004 (8-weeks)	116.42	3.62	112.80	6.28	49.3	257	27.7	46	2.4	0.0
MW-1	1/4/2005 (4th Quarter)	116.42	1.74	114.68	6.47	57.7	255	30.6	47	2.8	0.0
MW-1	2/2/2005 (O&M event)	116.42	2.48	113.94	7.51	52.7	352	41.5	55	1.2	0.0
MW-1	4/18/2005 (1st quarter)	116.42	2.75	113.67	5.70	57.8	249	24.9	58	2.2	0.4
MW-1	5/31/05 (O&M event)	116.42	3.78	112.64	6.75	72.1	395	34.9	-10	1.0	0.0
MW-1	7/5/2005 (O&M event)	116.42	4.56	111.86	7.11	65.6	222	51.4	23	1.2	0.0
MW-1	8/4/2005 (2nd quarter)	116.42	5.84	110.58	7.16	69.5	214	NS	NS	NS	NS
MW-1	9/9/2005 (O&M event)	116.42	7.01	109.41	6.87	62.9	346	13.0	27	0.8	0.0
MW-1	10/6/2005 (3rd quarter)	116.42	5.51	110.91	6.87	63.3	199	18.2	113	0.4	0.0
MW-1	12/7/2005 (O&M event)	116.42	2.23	114.19	6.47	61.6	253	7.2	37	0.0	0.0
MW-1	1/4/2006 (4th quarter)	116.42	1.68	114.74	6.84	60.5	203	18.5	38	0.4	0.0
MW-1	1/30/2006 (O&M event)	116.42	1.33	115.09	6.28	58.6	186	275.3*	79	0.2	0.0
MW-1	3/13/2006 (O&M event)	116.42	2.12	114.30	6.35	58.4	185	33.8	173	0.4	0.3
MW-1	4/4/2006 (1st quarter)	116.42	1.74	114.68	6.87	55.4	201	23.7	363	0.3	0.1
MW-1	5/3/2006 (O&M event)	116.42	1.89	114.53	7.95	63.93	311	4.04	196.5	0.4	0.0
MW-1	6/6/2006 (O&M event)	116.42	2.23	114.19	7.97	57.38	304	40.4	188.5	0.3	0.0
MW-1	7/6/2006 (2nd quarter)	116.42	1.83	114.59	7.08	62.8	269	NS	54	0.1	0.0

Table 3
ISOC Field Sampling Parameters
 Seymour Residence
 111 Riverside Drive, Rio Dell, CA

Well I. D.	Sampling Date	TOC (feet)	DTW (feet)	GWE (feet)	pH	TEMP (°F)	COND. (mS/cm)	DO mg/L	ORP mV	Total Fe mg/L	Fe ²⁺ mg/L
MW-2	10/5/2004 (pre install)	115.65	7.47	108.18	6.12	69.5	342	5.0	17	1.0	0.0
MW-2	10/25/2004 (2-week)	115.65	5.69	109.96	6.49	64.5	364	6.5	52	0.3	0.6
MW-2	11/2/2004 (4-week)	115.65	5.25	110.40	6.05	68.5	380	6.9	53	0.0	0.0
MW-2	12/03/2004 (8-weeks)	115.65	4.46	111.19	6.18	49.6	257	5.1	43	0.0	0.0
MW-2	1/4/2005 (4th Quarter)	115.65	1.18	114.47	6.49	57.4	372	5.5	39	0.4	0.0
MW-2	2/2/2005 (O&M event)	115.65	4.17	111.48	7.52	52.9	395	5.8	51	0.9	0.0
MW-2	4/18/2005 (1st quarter)	115.65	3.32	112.33	6.24	59.8	355	2.5	45	0.2	0.0
MW-2	5/31/05 (O&M event)	115.65	4.82	110.83	6.38	64.9	489	5.4	34	0.0	0.0
MW-2	7/5/2005 (O&M event)	115.65	4.46	111.19	7.01	70.5	308	4.1	9	0.0	0.0
MW-2	8/4/2005 (2nd quarter)	115.65	4.62	111.03	6.99	67.2	280	NS	NS	NS	NS
MW-2	9/9/2005 (O&M event)	115.65	5.41	110.24	6.15	66.5	438	7.9	25	0.0	0.0
MW-2	10/6/2005 (3rd quarter)	115.65	5.52	110.13	6.30	69.4	294	7.5	112	0.0	0.0
MW-2	12/7/2005 (O&M event)	115.65	3.58	112.07	6.52	63.9	253	7.2	37	0.2	0.0
MW-2	1/4/2006 (4th quarter)	115.65	2.64	113.01	6.82	61.6	279	4.7	24	0.0	0.0
MW-2	1/30/2006 (O&M event)	115.65	1.89	113.76	6.44	58.0	288	38.6*	80.7	0.0	0.0
MW-2	3/13/2006 (O&M event)	115.65	1.43	114.22	6.35	58.5	283	4.35	184	0.6	0.3
MW-2	4/4/2006 (1st quarter)	115.65	2.68	112.97	6.23	55.6	281	64.6	234	0.2	0.0
MW-2	5/3/2006 (O&M event)	115.65	2.58	113.07	7.89	58.1	183	39.44	82	0.1	0.0
MW-2	6/6/2006 (O&M event)	115.65	3.22	112.43	7.76	56.48	194	3.9	86.4	0.2	0.0
MW-2	7/6/2006 (2nd quarter)	115.65	2.53	113.12	6.91	67.1	325	NS	57	0.1	0.0

Notes:

TOC Top of casing elevation referenced to project datum
 DTW Depth to water below TOC
 GWE Groundwater elevation (TOC-DTW)
 DO dissolved oxygen - milligrams per liter (mg/L)
 ORP oxidation-reduction potential - millivolts (mV)
 Total Fe total iron - milligrams per liter (mg/L)
 Fe²⁺ ferrous iron - milligrams per liter (mg/L)
 * DO unit is percent (%)
 NS Not Sampled

TABLE 4 - INDIRECT GEOCHEMICAL INDICATORS

Site - Jean and Everett Seymour Property
1111 Riverside Dr.
Rio Dell, California

WELL	DATE	Total Iron (mg/l); Field Test	Ferrous Iron Fe ²⁺ (mg/l); Field Test	Ferric Iron Fe ³⁺ (mg/l) by subtraction	Fe ²⁺ /Fe total Ratio	Dissolved Oxygen (mg/l); Field Test	Oxidation Reduction Potential (ORP) (mV); Field Test	pH Field Test	TPH-gasoline (ug/l)	Benzene (ug/l)
MW-1	10/6/2004	8.8	4.6	4.4	52%	3.6	47	6.27	4,200	290
	1/5/2005	2.8	0.0	2.8	0%	30.6	47	6.47	<50	<0.5
	4/18/2005	2.2	0.4	1.8	18%	24.9	58	5.7	<50	<0.5
	8/4/2005	NA	NA	NA	NA	NA	NA	NA	81	3.7
	10/6/2005	0.4	0.0	0.4	0%	18.2	113	6.87	<50	<0.5
	1/4/2006	0.4	0.0	0.4	0%	18.49	38	6.84	<50	<0.5
	4/4/2006	0.3	0.1	0.3	22%	23.7	363	6.87	<50	<0.5
	7/6/2006	0.1	0.0	0.1	0%	NS	54	7.08	<50	<0.5
MW-2	10/6/2004	1.0	0.0	1.0	0%	5	17	6.07	<50	<0.5
	1/5/2005	0.4	0.0	0.4	0%	5.5	39	6.49	<50	<0.5
	4/18/2005	0.2	0.0	0.2	0%	2.5	45	6.24	<50	<0.5
	8/4/2005	NA	NA	NA	NA	NA	NA	NA	<50	<0.5
	10/6/2005	0.0	0.0	0.0	-	7.5	112	6.30	<50	<0.5
	1/4/2006	0.0	0.0	0.0	-	4.74	24	6.82	<50	<0.5
	4/4/2006	0.2	0.0	0.2	14%	4.63	234	6.83	<50	<0.5
	7/6/2006	0.1	0.0	0.1	0%	NS	57	6.91	<50	<0.5
MW-3	10/6/2004	3.0	0.0	3.0	0%	3.6	-6	6.28	<50	<0.5
	1/5/2005	6.6	0.0	6.6	0%	4.9	55	6.17	<50	<0.5
	4/18/2005	2.0	0.0	2.0	0%	1.8	60	6.01	<50	<0.5
	8/4/2005	NA	NA	NA	NA	NA	NA	NA	<50	<0.5
	10/6/2005	0.0	0.0	0.0	-	6.4	88	6.24	<50	<0.5
	1/4/2006	0.4	0.0	0.4	0%	4.46	26	6.88	<50	<0.5
	4/4/2006	0.2	0.0	0.2	0%	0.37	261	6.86	<50	<0.5
	7/6/2006	0.2	0.0	0.2	6%	NS	55	7.58	<50	<0.5
MW-4	10/6/2004	3.0	0.0	3.0	0%	3.6	-6	6.28	<50	<0.5
	1/5/2005	1.4	0.0	1.4	0%	6.6	40	6.39	<50	<0.5
	4/18/2005	1.4	0.4	1.0	29%	6.8	62	5.39	<50	<0.5
	8/4/2005	NA	NA	NA	NA	NA	NA	NA	<50	<0.5
	10/6/2005	1.0	0.0	1.0	0%	6.1	78	5.84	<50	<0.5
	1/4/2006	0.4	0.0	0.4	0%	5.78	26	6.95	<50	<0.5
	4/4/2006	0.5	0.2	0.4	30%	0.24	254	6.97	<50	<0.5
	4/4/2006	0.5	0.2	0.4	30%	0.24	254	6.97	<50	<0.5

NOTES:

mg/L: milligrams per liter.

ND: Not detected above the laboratory reporting limit (see laboratory reports for reporting limits).

NA: Not analyzed

calc: Calculation performed in the laboratory

CLEARWATER GROUNDWATER MONITORING
AND
SAMPLING PROTOCOLS

CLEARWATER GROUP

Groundwater Monitoring and Sampling Field Procedures

Groundwater Monitoring

Prior to beginning, a decontamination area is established. Decontamination procedures consist of scrubbing downhole equipment in an Alconox® solution wash (wash solution is pumped through any purging pumps used), and rinsing in a first rinse of potable water and a second rinse of potable water or deionized water if the latter is required. Any non-dedicated down hole equipment is decontaminated prior to use.

Prior to purging and sampling a well, the static water level is measured to the nearest 0.01 feet with an electronic water sounder. Depth to bottom is typically measured once per year, at the request of the project manager, and during Clearwater's first visit to a site. If historical analytical data are not available, with which to establish a reliable order of increasing well contamination, the water sounder and tape will be decontaminated between each well. If floating separate-phase hydrocarbons (SPH) are suspected or observed, SPH is collected using a clear, open-ended product bailer, and the thickness is measured to the nearest 0.01 feet in the bailer. SPH may alternatively be measured with an electronic interface probe. Any monitoring well containing a measurable thickness of SPH before or during purging is not additionally purged and no sample is collected from that well. Wells containing a hydrocarbon sheen are sampled unless otherwise specified by the project manager. Field observations such as well integrity as well as water level measurements and floating product thicknesses are noted on the Gauging Data/Purge Calculations form.

Well Purging

Each monitoring well to be sampled is purged using either a PVC bailer or a submersible pump. Physical parameters (pH, temperature and conductivity) of the purge water are monitored during purging activities to assess if the water sample collected is representative of the aquifer. If required, parameters such as dissolved oxygen, turbidity, salinity etc. are also measured. Samples are considered representative if parameter stability is achieved. Stability is defined as a change of less than 0.25 pH units, less than 10% change in conductivity in micro mhos, and less than 1.0 degree centigrade (1.8 degrees Fahrenheit) change in temperature. Parameters are measured in a discreet sample decanted from the bailer separately from the rest of the purge water. Parameters are measured at least four times during purging; initially, and at volume intervals of one well volume. Purging continues until three well casing volumes have been removed or until the well completely dewater. Wells which dewater or demonstrate a slow recharge, may be sampled after fewer than three well volumes have been removed. Well purging information is recorded on the Purge Data sheet. All meters used to measure parameters are calibrated daily. Purge water is sealed, labeled, and stored on site in D.O.T.-approved 55-gallon drums. After being chemically profiled, the water is removed to an appropriate disposal facility by a licensed waste hauler.

Groundwater Sample Collection

Groundwater samples are collected immediately after purging or, if purging rate exceeds well recharge rate, when the well has recharged to at least 80% of its static water level. If recharge is extremely slow, the well is allowed to recharge for at least two hours, if practicable, or until sufficient volume has accumulated for sampling. The well is sampled within 24 hours of purging or repurged. Samples are collected using polyethylene bailers, either disposable or dedicated to the well. Samples being analyzed for compounds most sensitive to volatilization are collected first. Water samples are placed in appropriate laboratory-supplied containers, labeled, documented on a chain of custody form and placed on ice in a cooler for transport to a state-certified analytical laboratory. Analytical detection limits match or surpass standards required by relevant local or regional guidelines.

Quality Assurance Procedures

To prevent contamination of the samples, Clearwater personnel adhere to the following procedures in the field:

- A new, clean pair of latex gloves are put on prior to sampling each well.
- Wells are gauged, purged and groundwater samples are collected in the expected order of increasing degree of contamination based on historical analytical results.
- All purging equipment will be thoroughly decontaminated between each well, using the procedures previously described at the beginning of this section.
- During sample collection for volatile organic analysis, the amount of air passing through the sample is minimized. This helps prevent the air from stripping the volatiles from the water. Sample bottles are filled by slowly running the sample down the side of the bottle until there is a convex meniscus over the mouth of the bottle. The lid is carefully screwed onto the bottle such that no air bubbles are present within the bottle. If a bubble is present, the cap is removed and additional water is added to the sample container. After resealing the sample container, if bubbles still are present inside, the sample container is discarded and the procedure is repeated with a new container.

Laboratory and field handling procedures may be monitored, if required by the client or regulators, by including quality control (QC) samples for analysis with the groundwater samples. Examples of different types of QC samples are as follows:

- Trip blanks are prepared at the analytical laboratory by laboratory personnel to check field handling procedures. Trip blanks are transported to the project site in the same manner as the laboratory-supplied sample containers to be filled. They are not opened, and are returned to the laboratory with the samples collected. Trip blanks are analyzed for purgable organic compounds.
- Equipment blanks are prepared in the field to determine if decontamination of field sampling equipment has been effective. The sampling equipment used to collect the groundwater samples is rinsed with distilled water which is then decanted into laboratory-supplied containers. The equipment blanks are transported to the laboratory, and are analyzed for the same chemical constituents as the samples collected at the site.
- Duplicates are collected at the same time that the standard groundwater samples are being collected and are analyzed for the same compounds in order to check the reproducibility of laboratory data. They are typically only collected from one well per sampling event. The duplicate is assigned an identification number that will not associate it with the source well.

Generally, trip blanks and field blanks check field handling and transportation procedures. Duplicates check laboratory procedures. The configuration of QC samples is determined by Clearwater depending on site conditions and regulatory requirements.

CLEARWATER WELL GAUGING DATA/
PURGE CALCULATIONS
AND
WELL PURGING DATA

PURGE DATA SHEET

Job No.: AED004 Location: 1111 RIVERSIDE DR. Rio Dell, CA Date: 7/6/06 Sheet 1 of 2
 Tech: RODNEY BERN
DO meter did not work

WELL #	TIME	VOL. (gal.)	ORP	CND	TMP	DO	pH	Fe ²⁺	Fe _T	Sample for:
MW 4	949	3.00	056	16	59.4		8.15	0.10	0.18	TPHg TPHd 8260
Calc. purge	949	4.00		16	59.5		8.15			BTEX MTBE Metals
volume	951	5.00		15	59.4		8.15			Purging Method:
4.82										PVC Bailer/Pump/Disp. Bailer

COMMENTS: color, turbidity, recharge, sheen, odor

CLEAR, low, good, no sheen, no odor

POST DEPTH TO WATER: 2.74 SAMPLE TIME: 1040

WELL #	TIME	VOL. (gal.)	ORP	CND	TMP	DO	pH	Fe ²⁺	Fe _T	Sample for:
MW 3	1005	2.00	055	21	63.1		7.58	0.01	0.17	TPHg TPHd 8260
Calc. purge	1105	4.00		22	63.1		7.55			BTEX MTBE Metals
volume	1007	6.50		223	63.1		7.51			Purging Method:
6.32										PVC Bailer/Pump/Disp. Bailer

COMMENTS: color, turbidity, recharge, sheen, odor

CLEAR, low, good, no sheen, no odor

POST DEPTH TO WATER: 1.59 SAMPLE TIME: 1050

WELL #	TIME	VOL. (gal.)	ORP	CND	TMP	DO	pH	Fe ²⁺	Fe _T	Sample for:
MW 2	1009	2.00	057	32	67.1		6.91	0.00	0.21	TPHg TPHd 8260
Calc. purge	1011	4.00		327	67.9		6.88			BTEX MTBE Metals
volume	1013	6.00		325	68.3		6.86			Purging Method:
5.92										PVC Bailer/Pump/Disp. Bailer

COMMENTS: color, turbidity, recharge, sheen, odor

CLEAR, low, good, no sheen, no odor

POST DEPTH TO WATER: 2.46 SAMPLE TIME: 1108

PURGE DATA SHEET

Job No.: PECOH Location: 1211 RIVERSIDE DR. RIO DELL, CA Date: 7/6/06 Sheet 1 of 2 Tech: RONY BERR

WELL #	TIME	VOL. (gal.)	ORP	CND	TMP	DO	pH	Fe ²⁺	Fe _T	
<u>M21</u>	<u>1023</u>	<u>2.00</u>	<u>059</u>	<u>269</u>	<u>62.8</u>		<u>7.08</u>	<u>0.00</u>	<u>0.13</u>	Sample for:
Calc. purge	<u>1025</u>	<u>4.00</u>		<u>270</u>	<u>62.8</u>		<u>7.07</u>			TPHg TPHd 8260
volume	<u>1028</u>	<u>6.00</u>		<u>270</u>	<u>62.8</u>		<u>7.05</u>			BTEX MTBE Metals
<u>529</u>										Purging Method:
										PVC Bailer/Pump/Disp. Bailer

COMMENTS: color, turbidity, recharge, sheen, odor

CLEAR, LOW, GOOD, NO SHEEN, NO ODR

POST DEPTH TO WATER: 1.79 SAMPLE TIME: 11/0

WELL #	TIME	VOL. (gal.)	ORP	CND	TMP	DO	pH	Fe ²⁺	Fe _T	
										Sample for:
Calc. purge										TPHg TPHd 8260
volume										BTEX MTBE Metals
										Purging Method:
										PVC Bailer/Pump/Disp. Bailer

COMMENTS: color, turbidity, recharge, sheen, odor

POST DEPTH TO WATER: _____ SAMPLE TIME: _____

WELL #	TIME	VOL. (gal.)	ORP	CND	TMP	DO	pH	Fe ²⁺	Fe _T	
										Sample for:
Calc. purge										TPHg TPHd 8260
volume										BTEX MTBE Metals
										Purging Method:
										PVC Bailer/Pump/Disp. Bailer

COMMENTS: color, turbidity, recharge, sheen, odor

POST DEPTH TO WATER: _____ SAMPLE TIME: _____

Environmental Bio-Systems, Inc. - 707 View Point Road, Mill Valley, California 94941
Phone : (415) 381-5195

DTB = Depth to Bottom
DTW = Depth to Water
ST = Saturated Thickness (DTB-DTW) must be > 1 foot
V = Casing Volume (ST x cf)
V = Purge Volume (standard 3 x CV, well development 10 x CV)
PL = Thickness of Separate Phase Liquid

2-inch diameter well cf = 0.16 gal/ft
4-inch diameter well cf = 0.65 gal/ft
6-inch diameter well cf = 1.44 gal/ft

6-inch diameter well $cl=1.44$ gal/ft

PURGE DATA SHEET

Job No.: A2001H Location: 1111 RIVERSIDE DR. Rio Dell, CA Date: 5/3/06 Sheet 1 of 1
Tech: Rodney Berry

WELL #	TIME	VOL. (gal.)	ORP	CND	TMP	DO	pH	Fe ²⁺	Fe _T	
<u>TW-2</u>			<u>820</u>	<u>183</u>	<u>58.18</u>	<u>39.4</u>	<u>7.89</u>	<u>0.00</u>	<u>0.14</u>	Sample for:
Calc. purge										TPHg TPHd 8260
Volume										BTEX MTBE Metals
										Purging Method:
										PVC Bailer/Pump/Disp. Bailer

COMMENTS: color, turbidity, recharge, sheen, odor

POST DEPTH TO WATER: _____ SAMPLE TIME: _____

WELL #	TIME	VOL. (gal.)	ORP	CND	TMP	DO	pH	Fe ²⁺	Fe _T	
<u>TW-1</u>			<u>196.5</u>	<u>311</u>	<u>63.93</u>	<u>40.1</u>	<u>7.95</u>	<u>0.00</u>	<u>0.35</u>	Sample for:
Calc. purge										TPHg TPHd 8260
Volume										BTEX MTBE Metals
										Purging Method:
										PVC Bailer/Pump/Disp. Bailer

COMMENTS: color, turbidity, recharge, sheen, odor

POST DEPTH TO WATER: _____ SAMPLE TIME: _____

WELL #	TIME	VOL. (gal.)	ORP	CND	TMP	DO	pH	Fe ²⁺	Fe _T	
										Sample for:
Calc. purge										TPHg TPHd 8260
Volume										BTEX MTBE Metals
										Purging Method:
										PVC Bailer/Pump/Disp. Bailer

COMMENTS: color, turbidity, recharge, sheen, odor

POST DEPTH TO WATER: _____ SAMPLE TIME: _____

LABORATORY REPORT
AND
CHAIN-OF-CUSTODY FORM



Report Number : 50968

Date : 7/10/2006

Matthew Ryder-Smith
Clearwater Group, Inc.
229 Tewksbury Avenue
Point Richmond, CA 94801

Subject : 4 Water Samples
Project Name : SEYMOUR RESIDENCE
Project Number : AE001H

Dear Mr. Ryder-Smith,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

A handwritten signature in black ink, appearing to read "Joel Kiff".

Joel Kiff



Report Number : 50968

Date : 7/10/2006

Project Name : **SEYMOUR RESIDENCE**

Project Number : **AE001H**

Sample : **MW-4**

Matrix : Water

Lab Number : 50968-01

Sample Date : 7/6/2006

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
Toluene	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	7/8/2006
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	7/8/2006
4-Bromofluorobenzene (Surr)	106		% Recovery	EPA 8260B	7/8/2006

Approved By:

Joel Kiff



Report Number : 50968

Date : 7/10/2006

Project Name : **SEYMOUR RESIDENCE**

Project Number : **AE001H**

Sample : **MW-3**

Matrix : Water

Lab Number : 50968-02

Sample Date : 7/6/2006

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
Toluene	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	7/8/2006
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	7/8/2006
4-Bromofluorobenzene (Surr)	104		% Recovery	EPA 8260B	7/8/2006

Approved By:

Joel Kiff



Report Number : 50968

Date : 7/10/2006

Project Name : **SEYMOUR RESIDENCE**

Project Number : **AE001H**

Sample : **MW-2**

Matrix : Water

Lab Number : 50968-03

Sample Date : 7/6/2006

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
Toluene	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	7/8/2006
Toluene - d8 (Surr)	94.2		% Recovery	EPA 8260B	7/8/2006
4-Bromofluorobenzene (Surr)	99.2		% Recovery	EPA 8260B	7/8/2006

Approved By:

Joel Kiff



Report Number : 50968

Date : 7/10/2006

Project Name : SEYMOUR RESIDENCE

Project Number : AE001H

Sample : MW-1

Matrix : Water

Lab Number : 50968-04

Sample Date : 7/6/2006

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
Toluene	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	7/8/2006
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	7/8/2006
Toluene - d8 (Surr)	94.9		% Recovery	EPA 8260B	7/8/2006
4-Bromofluorobenzene (Surr)	99.6		% Recovery	EPA 8260B	7/8/2006

Approved By:

Joel Kiff

Report Number : 50968

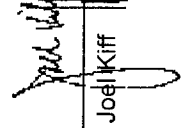
Date : 7/10/2006

QC Report : Method Blank Data

Project Name : **SEYMOUR RESIDENCE**

Project Number : **AE001H**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed	Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006	Benzene	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
Toluene	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006	Toluene	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006	Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006	Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	7/8/2006	TPH as Gasoline	< 50	50	ug/L	EPA 8260B	7/8/2006
Toluene - d8 (Surr)	100		%	EPA 8260B	7/8/2006	Toluene - d8 (Surr)	100		%	EPA 8260B	7/8/2006
4-Bromofluorobenzene (Surr)	105		%	EPA 8260B	7/8/2006	4-Bromofluorobenzene (Surr)	105		%	EPA 8260B	7/8/2006
Benzene	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006	Benzene	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
Toluene	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006	Toluene	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006	Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006	Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006	Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006	Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006	Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006	Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	7/8/2006
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	7/8/2006	Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	7/8/2006
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	7/8/2006	TPH as Gasoline	< 50	50	ug/L	EPA 8260B	7/8/2006
Toluene - d8 (Surr)	92.1		%	EPA 8260B	7/8/2006	Toluene - d8 (Surr)	92.1		%	EPA 8260B	7/8/2006
4-Bromofluorobenzene (Surr)	102		%	EPA 8260B	7/8/2006	4-Bromofluorobenzene (Surr)	102		%	EPA 8260B	7/8/2006



Approved By: Joel Kiff

KIFF ANALYTICAL, LLC

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

Report Number : 50968

Date : 7/10/2006

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : **SEYMOUR RESIDENCE**

Project Number : **AE001H**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Benzene	50981-07	<0.50	40.0	40.0	41.7	41.5	ug/L	EPA 8260B	7/8/06	104	104	0.541	70-130	25
Toluene	50981-07	<0.50	40.0	40.0	42.2	41.6	ug/L	EPA 8260B	7/8/06	105	104	1.44	70-130	25
Benzene	50981-05	<0.50	40.0	40.0	42.0	41.2	ug/L	EPA 8260B	7/8/06	105	103	1.96	70-130	25
Toluene	50981-05	<0.50	40.0	40.0	39.4	38.4	ug/L	EPA 8260B	7/8/06	98.6	96.1	2.56	70-130	25
Tert-Butanol	50981-05	<5.0	200	200	192	196	ug/L	EPA 8260B	7/8/06	96.0	97.8	1.86	70-130	25
Methyl-t-Butyl Ether	50981-05	<0.50	40.0	40.0	45.4	45.0	ug/L	EPA 8260B	7/8/06	113	113	0.726	70-130	25



Approved By: Joel Kiff

KIFF ANALYTICAL, LLC

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

Report Number : 50968

Date : 7/10/2006

QC Report : Laboratory Control Sample (LCS)

Project Name : SEYMOUR RESIDENCE

Project Number : AE001H

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Benzene	40.0	ug/L	EPA 8260B	7/8/06	98.4	70-130
Toluene	40.0	ug/L	EPA 8260B	7/8/06	102	70-130
Benzene	40.0	ug/L	EPA 8260B	7/8/06	99.1	70-130
Toluene	40.0	ug/L	EPA 8260B	7/8/06	95.9	70-130
Tert-Butanol	200	ug/L	EPA 8260B	7/8/06	96.6	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	7/8/06	107	70-130

KIFF ANALYTICAL, LLC

Approved By:

Joel Kiff

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

